

Appl. No.: 10/623,271
Supplemental Amendment Dated: March 7, 2008
Reply to Office Action of September 19, 2007

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. **(Currently Amended)** An orthotic device to be worn by a user, comprising:

a base unit having an elongated support member, at least one support pad adjacently positioned on and attached to said support member, a fastener extending between said support member and said support pad, and ~~an aperture~~ a plurality of apertures in said support member each capable of receiving a connector therein;

said base unit conforming substantially about a forearm of the user;

a metacarpal unit having a metacarpal internal pad positioned on and attached to ~~an external~~ a casing and an attachment member between said ~~external~~ casing and said metacarpal internal pad; and

a hinge system connecting said base unit to said metacarpal unit, said hinge system having a shell with a shell interior pad positioned on said shell ~~and a plurality of apertures in said shell each capable of accepting a connector therein~~, said hinge system movably connecting the metacarpal unit to the base unit when worn by the user, such that the metacarpal unit pivots vertically about a pair of connectors in a first direction relative to ~~a stationary~~ the base unit, and the hinge system further including another connector forming a swivel joint for movably connecting the metacarpal unit to the base unit when worn by the user,

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such that the metacarpal unit pivots laterally in a second direction substantially transverse to the first direction relative to ~~a stationary~~ the base unit.

2. **(Cancelled)**

3. **(Previously Presented)** The orthotic device as recited in claim 1, wherein said elongated support member has at least one recess formed therein allowing said fastener to access said support pad.

4. **(Currently Amended)** The orthotic device as recited in claim 1, wherein said elongated support member, said shell and said ~~external~~ casing are each made of a material selected from the group consisting of: epoxy matrix carbon fiber, moldable carbon fiber, Kevlar composite material, plastic and thermoplastic material.

5. **(Previously Presented)** The orthotic device as recited in claim 1, wherein said at least one support pad, said metacarpal interior pad and said shell internal pad being made of a material selected from the group consisting of: open cell foam, closed cell foam, cotton, a viscoelastic polymer-gel or air filled member.

6-8. **(Cancelled)**

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9. **(Currently Amended)** The orthotic device as recited in claim 1, wherein said support pad is detachably affixed on said support member, where said internal pad is removably attached on said ~~external~~ casing, and where said interior pad is detachably fastened on said ~~exterior~~ shell.

10. **(Cancelled)**

11. **(Previously Presented)** The orthotic device as recited in claim 1, wherein said hinge system is capable of moving said metacarpal unit to a 45° angle in a vertical extension fashion with respect to the base unit.

12. **(Previously Presented)** The orthotic device as recited in claim 1, wherein said hinge system is capable of moving said metacarpal unit to a 150° angle in a vertical, flexing fashion with respect to the base unit.

13. **(Original)** The orthotic device as recited in claim 1, wherein said elongated support member and said shell each have at least one stop formed thereon, wherein each of said stop abuts one another to limit extension, flexion and ulnar-radial deviation.

14-15. **(Cancelled)**

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16. **(Currently Amended)** An orthotic device for rehabilitation of a user's wrist, comprising:

a base unit having an elongated support member and conforming substantially to a forearm of the user, a support pad at least partially on said support member, and a plurality of apertures ~~an aperture~~ in said support member each capable of receiving a connector therein, said elongated support member having at least one recess formed therein allowing said fastener to access said support pad;

a metacarpal unit having an internal pad at least partially on ~~an external~~ a casing and an attachment member between said external casing and said metacarpal pad, the ~~external~~ casing configured for positioning under the dorsal surface of the user's hand; and

a hinge system connecting said base unit to said metacarpal unit, said hinge system ~~having a shell with a plurality of apertures in said shell each capable of accepting a connector therein, said hinge system~~ movably connecting the metacarpal unit to the base unit when worn by the user, such that the metacarpal unit pivots vertically about a pair of connectors in a first direction relative to ~~a stationary~~ the base unit, and the hinge system further including another connector forming a swivel joint for movably connecting the metacarpal unit to the base unit when worn by the user, such that the metacarpal unit pivots laterally in a second direction substantially transverse to the first direction relative to ~~a stationary~~ the base unit.

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17. **(Cancelled)**

18. **(Previously Presented)** The orthotic device as recited in claim 16, wherein said elongated support member, said shell and said casing are each made of a material selected from the group consisting of: epoxy matrix carbon fiber, moldable carbon fiber, Kevlar composite material, plastic and thermoplastic material.

19. **(Previously Presented)** The orthotic device as recited in claim 16, wherein said support pad and said metacarpal interior pad each being made of a material selected from the group consisting of: open cell foam, closed cell foam, cotton, a viscoelastic polymer-gel or air filled member.

20. **(Currently Amended)** The orthotic device as recited in claim 16, where said support pad is detachably affixed on said support member, and said metacarpal pad is removably attached on said ~~external~~ casing.

21. **(Cancelled)**

22. **(Previously Presented)** The orthotic device as recited in claim 16, wherein said elongated support member and said shell each have at least one stop thereon to limit extension.

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23. **(Currently Amended)** An orthotic device to be worn by a user, comprising:

a base unit having an elongated support member and a support pad at least partially on said support member, a fastener extending between said support member and said support pad, and a plurality of apertures in said support member each capable of receiving a connector therein;

a metacarpal unit having a metacarpal pad at least partially on an external casing and an attachment member between said external casing and said metacarpal pad; and

a hinge system connecting said base unit to said metacarpal unit, said hinge system having a shell and a plurality of apertures in said shell each capable of accepting a corresponding connector therein, and said metacarpal unit swivels in a lateral fashion due to said hinge system, when said orthotic ~~orthotic~~ device is worn by the user, such that the metacarpal unit pivots vertically about a pair of connectors in a first direction relative to a stationary the base unit, and the hinge system further including another connector forming a swivel joint for movably connecting the metacarpal unit to the base unit when worn by the user, such that the metacarpal unit pivots laterally in a second direction substantially transverse to the first direction relative to a stationary the base unit.

24. **(Currently Amended)** The orthotic device as recited in claim 23, where said support pad is detachably affixed on said support member, and said metacarpal pad is removably attached on said ~~external~~ casing.

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25. **(Previously Presented)** The orthotic device as recited in claim 23, wherein said elongated support member and said shell each have at least one stop formed thereon to limit extension.

26. **(Previously Presented)** The orthotic device as recited in claim 23, wherein said hinge system is capable of moving up to a 45° angle in a vertical extension with respect to the base unit.

27. **(Currently Amended)** An orthotic device to be worn by a user, comprising:

a base unit having an elongated support member and a support pad at least partially on said support member, a fastener extending between said support member and said support pad, and a plurality of apertures in said support member each capable of receiving a connector therein;

~~wherein said support pad is detachably affixed on said support member, where said internal pad is removably attached on said external casing, and where said interior pad is detachably fastened on said exterior shell;~~

a metacarpal unit having an internal pad at least partially on an external casing and an attachment member between said external casing and said metacarpal internal pad;

a hinge system connecting said base unit to said metacarpal unit, said hinge system having a shell ~~and a plurality of apertures in said shell each~~

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~~capable of accepting a corresponding connector therein~~, and said metacarpal unit swivels in a lateral fashion relative to said base unit when worn by the user, such that the metacarpal unit pivots vertically in a first direction about a pair of connectors relative to a stationary base unit, and the hinge system further including another connector forming a swivel joint for movably connecting the metacarpal unit to the base unit when worn by the user, such that the metacarpal unit pivots laterally in a second direction substantially transverse to the first direction relative to a stationary base unit; and

said support pad is detachably affixed on said support member, said internal pad is removably attached on said ~~external~~ casing, and said interior pad is detachably fastened on said exterior shell.

28. **(Previously Presented)** The orthotic device as recited in claim 27, wherein said hinge system is capable of moving said metacarpal unit to a 45° angle in a vertical extension fashion with respect to the base unit.

29. **(Previously Presented)** The orthotic device as recited in claim 27, wherein said elongated support member and said shell each have at least one stop formed thereon, wherein each of said stop abuts one another to limit extension, flexion and ulnar-radial deviation.

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30. **(Currently Amended)** An orthotic device, comprising:

a base unit having an elongated support member, at least one support pad adjacently positioned on and attached to said support member, a fastener extending between said support member and said support pad, and ~~an aperture~~ a plurality of apertures in said support member each capable of receiving a connector therein;

a metacarpal unit having a metacarpal internal pad mounted onto and projecting from ~~an external~~ a casing and an attachment member between said external casing and said metacarpal internal pad, the external casing configured for positioning under the dorsal surface of the user's hand;

a hinge system connecting said base unit to said metacarpal unit, said hinge system having a shell with a shell interior pad positioned on said shell ~~and a plurality of apertures in said shell each capable of accepting the connector therein~~, such that the metacarpal unit pivots vertically about a pair of connectors in a first direction relative to a stationary base unit, and the hinge system further including another connector forming a swivel joint for movably connecting the metacarpal unit to the base unit when worn by the user, such that the metacarpal unit pivots laterally in a second direction substantially transverse to the first direction relative to ~~a stationary~~ the base unit; and

said metacarpal unit swivels in a lateral fashion due to said hinge system relative to said unit when said orthotic device is worn by the user.

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31. **(Previously Presented)** The orthotic device as recited in claim 30, wherein said elongated support member and said shell each have at least one stop formed thereon, wherein each of said stop abuts one another to limit extension, flexion and ulnar-radial deviation.

32. **(Previously Presented)** The orthotic device as recited in claim 30, wherein said hinge system is capable of moving said metacarpal unit to a 45° angle in vertical extension fashion with respect to the base unit.

33. **(Previously Presented)** The orthotic device as recited in claim 30, wherein said hinge system is capable of moving said metacarpal unit to a 150° angle in a vertical, flexing fashion with respect to the base unit.

34. **(Previously Presented)** The orthotic device as recited in claim 30, wherein said elongated support member and said shell each have at least one stop thereon to limit extension.

35. **(Currently Amended)** The orthotic device as recited in claim 30, where said support pad is detachably affixed on said support member, and said metacarpal pad is removably attached on said external casing.

36. **(Previously Presented)** The orthotic device as recited in claim 16, wherein said elongated support member and said shell each have at least one

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stop formed thereon, wherein each of said stop abuts one another to limit extension, flexion and ulnar-radial deviation.

37. **(Previously Presented)** The orthotic device as recited in claim 27, wherein said elongated support member and said shell each have at least one stop formed thereon, wherein each of said stop abuts one another to limit extension, flexion and ulnar-radial deviation.

38. **(Previously Presented)** The orthotic device as recited in claim 30, wherein said elongated support member and said shell each have at least one stop formed thereon, wherein each of said stop abuts one another to limit extension, flexion and ulnar-radial deviation.